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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,959	10/11/2001	Kay-Yut Chen	10018398	3006

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER
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TARAE, CATHERINE MICHELLE

ART UNIT	PAPER NUMBER
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3623

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/976,959

Applicant(s)

CHEN ET AL.

Examiner

C. Michelle Tarae

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. The following is a Non-Final Office Action in response to the communication received on October 16, 2006. Claims 1, 9, 11 and 16 have been amended. Claims 1-20 are now pending in this application.

#### ***Response to Amendment***

2. Applicant's amendments to claims 1, 9, 11 and 16 are acknowledged.

The amendments to claims 1 and 9 are sufficient to overcome the claim objection set forth in the previous Office Action; therefore the previous claim objections of claims 1 and 9 are withdrawn.

#### ***Response to Arguments***

3. Applicant's arguments with regard to Jennings et al. are moot in view of the new grounds of rejections.

With regard to the 35 U.S.C. 101 rejection for lacking tangibility have been fully considered, but are not persuasive. While the intended use limitation added to claims 1, 9 and 16 overcome the lack of utility part of the 35 U.S.C. 101 rejection, they are not sufficient to overcome the lack of tangibility part. For the claims to be tangible, the end result of the claims must provide a "real world" result to the user. This can be accomplished by, for example, displaying or storing the results or performing the results using a computer or processing device (i.e., a tangibly embodied medium). As the claims are currently recited, the results are not yet tangible as nothing is done with

them. Therefore, the 35 U.S.C. 101 rejection for lacking tangibility is maintained and repeated below.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent claims 1 and 9, it is still not readily apparent how the query process or the aggregating the results of the query process is related to the information market, as there is no recitation indicating that the query process is performed in connection with the running of the market information. In other words, it is not clear how the query process is related or is significant to the previous limitations of the participants trading financial instruments in the information market.

Claim 8 recites the limitation "probability of a potential outcome." There is insufficient antecedent basis for this limitation in the claim as it is not clear if the "probability of a potential outcome" is meant to be the same as "probability of a future outcome occurrence" as recited in claim 1.

In independent claim 16, it is not clear how a perfect information market is defined, nor is it clear what is being aggregated.

Claim 20 recites, Equation, in line 3. It is not clear what, Equation, is supposed to reference. Additionally, it is not clear what the relationship is between the no information prediction, the prediction of the best individual and the non-linear aggregation measure since they are all being compared, but it is not readily apparent that they all are providing the same type of data for a comparison to make sense. For example, it is not clear what no information prediction is aggregating, what the prediction of the best individual is aggregating or what the non-linear measure is aggregating.

***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. According to MPEP 2106, the claimed invention as a whole must produce a “useful, concrete and tangible” result to have a practical application in order to be considered statutory.

Independent claims 1 and 16 are considered not tangible as they do not provide a “real world” result to a user. For example, they do not actually display, provide to a user, or use a computer or processing device to aggregate the results of the query process (per claim 1) or the results of the benchmark comparisons (per claim 16). As the claims are currently recited, the results of the query or the benchmark comparisons are never applied to a “real world” result that would make them tangible. On the

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contrary, it is not clear from the claims what occurs with the results of the query after they are aggregated or with the benchmark comparisons after they are made.

Accordingly claims 1 and 16 are considered not tangible.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by fantasystockmarket.com (hereinafter, FSM).

As per claim 1, FSM discloses a forecasting process comprising:

running an information market, including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market (pages 1 and 3; Participants use fantasy money to trade stocks and mutual funds in a fantasy stock market.);

extracting participant characteristics through an analysis of results of trading of said financial instruments (pages 1 and 4; Participants' portfolios are tracked and they are ranked (i.e., based on their trading characteristics) against other participants.);

performing a query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation (pages

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1 and 3-4; By placing a trade on a stock or mutual fund, (i.e., buy/sell), a participant is indicating their confidence or lack thereof in the future prices of the stock/mutual fund.);

aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation (pages 3-4; Participants are ranked based on their trading performance. Thus, the results of how they trade impact their overall standing/ranking compared with other participants.).

As per claim 2, FSM discloses a forecasting process wherein said information market is designed to elicit characteristics of participants (pages 1, 3-4, 9; The fantasy stock market is used to track participant trading performance.).

As per claim 3, FSM discloses a forecasting process wherein said characteristics include participant risk inclination (pages 1, 3-4; How much a participant trades and the type of stocks/mutual funds they trade in are indications of the participants' risk inclination.).

As per claim 4, FSM discloses a forecasting process wherein said characteristics include participants ability to analyze information provided in said information market (pages 1, 3-4, 9; Participants trade in over 25,000 stocks/mutual funds listed in the NY, NASDAQ, American, etc. stock exchanges, thus reflecting different scenarios with different information. A player's ranking reflects how well they understood and utilized the various stock/mutual fund information.).

As per claim 5, FSM discloses a forecasting process further comprising correlating observed behavior to accepted characteristic tendencies (pages 1, 3-4, 9;

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Participants are ranked by correlating their trading performance to accepted trading tendencies.).

As per claim 6, FSM discloses a forecasting process wherein said information market includes an artificial market financial instrument corresponding to a real world state (page 1).

Claims 9-11 and 13-19 recite substantially similar subject matter to claims 1-6 above. Therefore, claims 9-11 and 13-19 are rejected on the same basis as claims 1-6 above.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Jennings et al. (U.S. 6,606,615).

As per claim 7, FSM does not expressly disclose a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants. Jennings et al. discloses a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided



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by participants and conditioning the reports by the characteristics of the participants (col. 53, lines 30-40; Apriori probabilities are revised to aggregate the predictions.).

FSM and Jennings et al. are analogous in that both solicit forecast values from participants for data that changes over time. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to aggregate the results of the query process by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performances.

As per claim 8, FSM does not expressly disclose a forecasting process wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics. Jennings et al. discloses a forecasting process wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics (col. 53, lines 30-40; The aggregation uses Bayesian estimators.). FSM and Jennings et al. are analogous in that both solicit forecast values from participants for data that changes over time. At the time of the invention, it would

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have been obvious to a person of ordinary skill in the art to modify FSM to aggregate the results of the query process by utilizing Bayes formula with each probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performances.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Clyman, "Unreasonable Rationality?" 1995.

As per claim 12, FSM does not expressly disclose a computer system wherein possible information market states are associated with an Arrow-Debreu state security. Clyman discloses market games being associated with an Arrow-Debreu state security (pages 4-5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM so that its information market states are associated with an Arrow-Debreu state security as Arrow-Debreu securities allow participants to trade in a single state, thereby simplifying the game for participants.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Tsukimoto (U.S. 6,353,816).

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As per claim 20, FSM does not expressly disclose a new environment aggregation function analysis process wherein three information aggregation mechanisms are compared to the benchmark distribution given by Equation using the Kullback-Leibler measure, said three information aggregation mechanisms include a no information prediction, the predictions of the best individual and a non-linear aggregation measure. Tsukimoto discloses using the Kullback-Leibler measure to measure the distance between a model and a true distribution for predicting the true probability distribution from given data (col. 19, lines 33-43). In this case, the given data may be the three information aggregation mechanisms, which are currently non-functional as they do not alter the comparison being performed, but instead, just provide data for the comparison. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994); MPEP § 2106. Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to use the Kullback-Leibler measure as doing so ensures an accurate measure of the true distribution among values, thereby enhancing the accuracy of the benchmark comparison.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Gersch et al. "Automatic Classification of Electroencephalograms: Kullback-Leibler Nearest Neighbor Rules," Science, 1979 [retrieved from JSTOR] discusses the Kullback-Leibler measure;
- Hammond, "History as a Widespread Externality in Some Arrow-Debreu Market Games," 1995 [retrieved from google.com] discusses Arrow-Debreu market games.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Michelle Tarae whose telephone number is 571-272-6727. The examiner can normally be reached Monday – Friday from 8:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz, can be reached at 571-272-6729.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script, reading "C. Michelle Tarae".

C. Michelle Tarae  
Primary Patent Examiner  
Art Unit 3623

January 3, 2007